

ASC-TR-96-1002

**ELEVATING AIRCRAFT RESCUE PLATFORM (Phase I)
PRODUCT EVALUATION REPORT**

Aeronautical Systems Center
Weapons, Air Base and Range Product Support Office
ASC/VXO
314 W. Choctawhatchee Ave., Suite 104
Eglin AFB, FL 32542-5717

12 February 1996

FINAL REPORT FOR PERIOD 14 APR 1995 - 5 JAN 1996

19960719 035

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AERONAUTICAL SYSTEMS CENTER
Air Force Material Command ■ United States Air Force ■ Eglin Air Force Base

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FOR THE COMMANDER



ROBERT RETTIE
Program Manager

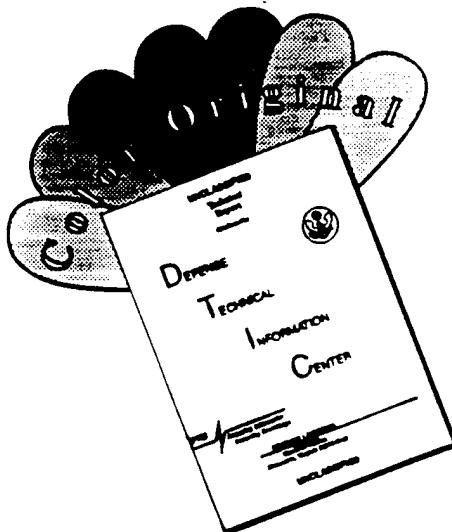
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1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE 12 February 1996	3. REPORT TYPE AND DATES COVERED Phase I, Final, 14 Apr 1995 - 5 Jan 1996
4. TITLE AND SUBTITLE ELEVATING AIRCRAFT RESCUE PLATFORM PRODUCT EVALUATION REPORT		5. FUNDING NUMBERS PE: 64708F
6. AUTHOR(S) MSgt Kevin T. McSweeney, Mr. Dave Morris, Bob Rettie, Stephen E. Kelley		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) 436 CES/CEF 600 8th Street Dover AFB, DE 19902-6600		8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Aeronautical System Center Weapons, Air Base and Range, Product Support Office (ASC/VXO) 324 Choctawhatchee Ave., Suite 104 Eglin AFB, FL 32542-5717		10. SPONSORING/MONITORING AGENCY REPORT NUMBER ASC-TR-96-1002
11. SUPPLEMENTARY NOTES		
12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited		12b. DISTRIBUTION CODE A

13. ABSTRACT (Maximum 200 words)

Final report of the commercial technology exploitation evaluation of the Lift-A-Loft model MP25-15 Special elevating platform produced by Lift-A-Loft Corporation of Muncie, Indiana. The evaluation was conducted by the 436 CES, Fire Protection Division, Dover AFB, Delaware between 14 Apr 1995 and 5 Jan 1996. This evaluation was part of a continuing program to explore commercial off the shelf technology for application to Air Force firefighting requirements. The Lift-A-Loft model MP25-15 is a battery powered hydraulically activated scissor lift platform that can be towed, using a pintle hook equipped vehicle, to an aircraft and positioned to provide access up to 25 feet 3 inches above ground level. When the platform, with two firefighters aboard, was raised above 18 feet, it began to sway from side to side 8 to 10 inches off center. The 436th Wing Safety Office terminated the evaluation for stability and safety concerns. Investigation for a safer reasonably priced vehicle will continue for flightline firefighting/rescue capability on large frame aircraft.

14. SUBJECT TERMS LIFT-A-LOFT; ELEVATING PLATFORM; C-5; C-17; KC-10		15. NUMBER OF PAGES 9	
		16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT SAR



DEPARTMENT OF THE AIR FORCE

AERONAUTICAL SYSTEMS CENTER (AFMC)

EGLIN AIR FORCE BASE, FLORIDA

12 Feb 96

MEMORANDUM FOR HQ AFCESA/CEXF

FROM: ASC/VXO
314 Choctawhatchee Ave., Suite 104
Eglin AFB, FL 32542-5717

SUBJECT: Elevating Aircraft Rescue Platform Product Evaluation Report
(Ref: Test Plan, 25 Jan 95)

1. PURPOSE AND BACKGROUND. The purpose of this test was to assess the effectiveness and suitability of the **Lift-A-Loft** elevating platform, model MP25-15 manufactured by Lift-A-Loft Corporation. The ability of firefighters to reach the upper level of large frame aircraft such as the C-5 Galaxy, is a continuing concern. The two recognized methods of quickly reaching the upper troop/passenger compartment are by the interior installed vertical ladder or use of a thirty-five foot ground ladder to reach the exterior of door 6 left/right. Fire and smoke conditions may preclude use of the interior ladder. Use of the exterior ladder raises numerous safety concerns, especially when the door must be opened and a fire fought while clinging to a ladder 25 feet above the ground. Neither means provides a quick effective method of extricating persons that are too badly injured to use slide chutes or vertical ladders. Other vehicles that have been used to remove injured personnel from the C-5 passenger/troop deck have been food service trucks that raise on a scissor lift, a passenger service stair truck, and a ladder fire truck. Ladder trucks are very expensive and are not authorized based upon potential aircraft rescue alone. The other vehicles are not assigned to the fire department and could be in other uses when needed for an emergency. The goal is to place firefighters into large frame aircraft and allow the lowering of injured passengers/crew members, at least 3 at a time, to the ground while accompanied by an emergency medical technician. The evaluation was managed by the 436 CES/CEF at Dover AFB, Delaware between 14 Apr 95 and 5 Jan 96.

2. SYSTEM DESCRIPTION. The **Lift-A-Loft** elevating platform is a battery powered hydraulically activated scissor lift platform that can be towed, using a pintle hook equipped vehicle, to an aircraft and positioned to provide access up to 25 feet 3 inches above ground level. The battery power is a 24 Volt Deep Cycle system with a built in fully automatic battery charger. An integral 120V AC, 60 Hz, 20 Amp electrical outlet is available on the platform if the system pigtail is attached to an AC outlet. The elevated platform is 45 by 101 inches with an Extenda-Deck™ that increases length to 149 inches. The platform has

pinned/removable guardrails and the extending portion has an aircraft bumper and aircraft interface flap. A manual override provides an emergency lowering capability in case of electrical failure. The unit weighs 3,500 lbs. and the platform capacity is rated at 1,500 lbs.

3. **METHOD.** The **Lift-A-Loft** elevating platform was used to conduct firefighting/ rescue training/testing on a C-5 aircraft located on row BB of the main parking ramp at Dover AFB, DE. At a height of 18 feet, the evaluation was terminated by the 436th Wing Safety Office due to the amount of sway of the horizontal platform with two firefighters aboard. Evaluation was terminated until the safety concerns could be resolved.

4. **OBJECTIVES AND RESULTS.** The following objectives were established to assess effectiveness, compatibility, adequacy of technical data, reliability, maintainability, and availability of the **Lift-A-Loft** elevating platform system when used to provide fire/rescue personnel access to large frame aircraft.

a. Objective E-1. Assess the effectiveness of the elevating platform system to provide timely and safe access to large frame aircraft during training and emergency response scenarios. Of special interest is the stability of the platform and the perception of personnel working on the platform while it is in the up position. The measure of effectiveness was time required to position the system and get firefighter personnel safely into the emergency aircraft. The criteria is not established. **Results:**

(1). During the initial training scenario, with a wind of 12 knots, as the platform was being raised through 18 feet with two firefighters atop, the platform began to sway side to side, 8 to 10 inches off center. The 436th Wing Safety Office terminated the evaluation. This version of the **Lift-A-Loft** trailer does not have stabilizing outriggers. This was done deliberately to minimize set-up time and reduce tripping hazards around the base of the stand. The base is 45 inches wide and 111 inches long, the outriggers would extend 25 inches on both sides and add 5 $\frac{1}{2}$ inches beyond the front and back of the unit. The pavement of the Dover AFB parking ramp varies from level up to a 2% slope (2 feet of rise over a 100 foot run).

(2). The time required to position the system varies depending upon how much equipment or spilled fuel might be in the vicinity, but would nominally require a couple of minutes. To manually position the 3,500 lb. platform near the aircraft required 6 firefighters, one third of the normal fire/rescue response contingency. The awkward body postures and movements by the personnel positioning the platform could lead to lower back injuries or strains.

(3). The parking brake system is activated by pumping a hydraulic actuator which does not provide immediate braking capability. Personnel must either hold the device in-place until brakes are engaged or wheel chalks must be positioned behind the wheels before the brake is pumped up.

(4). The 700 lb. capacity of the extenda-deck[©] raised concern among the evaluators for two firemen in full turnout gear with a patient on a stretcher. The 48 inch length of the extenda-deck[©] would preclude more than one firefighter and half the stretcher weight being on the extended portion at one time. The platform capacity is 1500 lbs.

b. Objective S-1. Assess the compatibility of the elevating platform system with the operational environment. Can the system provide timely response in an emergency scenario? Are there adequate vehicles in the emergency response team to tow the platform? What speed can the device safely be towed? Does it interfere with any other equipment normally used in an aircraft emergency response? The measure of effectiveness was a subjective evaluation of interoperability with other emergency response equipment and personnel. The criteria is not established. **Results:**

(1). When towed at speeds above 5 mph, the **Lift-A-Loft** would become unstable behind the tow vehicle, swaying from side to side. The slow tow speed precludes towing the platform behind any emergency response vehicle. The required response time to the ends of the Dover AFB parking ramp is 2 minutes 15 seconds and cannot be achieved at a 5-7 mph tow speed.

(2). All personnel responding to a flightline emergency are assigned essential positions on the responding vehicles. No "extra" individuals are normally available at the fire station to tow the **Lift-A-Loft** to the site of an emergency, a non-fire vehicle and driver would have to be commandeered to move the platform. This impairs the responsiveness of the system.

(3). The system was not exercised enough to determine if it interfered with any other emergency response equipment.

c. Objective S-2. Assess the adequacy of the technical data provided with the **Lift-A-Loft** elevating platform system. An operator manual was provided with the system which was appraised for general content, troubleshooting and maintenance information. The measure of effectiveness was serviceability of the elevating platform system. The criteria is that the system should operate continually without unusual maintenance and that when a malfunction occurs, the information will provide adequate instructions for USAF personnel to return the system to full operation. **Results:** The technical data provided was not totally evaluated since no maintenance or troubleshooting was required during the abbreviated evaluation period.

d. Objective S-3. Assess the reliability, maintainability, and availability (RM&A) of the **Lift-A-Loft** elevating platform system. The measure of effectiveness was serviceability of the system. The criteria is not established. **Results:** No maintenance problems were experienced by the evaluation site during the period of evaluation. The **Lift-A-Loft** elevating platform was not in service long enough to reach any conclusions about the RM&A of the system.

5. CONCLUSIONS. The Lift-A-Loft elevating platform, model MP25-15 is not safe for fire rescue operations. The unit evaluated, which does not use outriggers, is not stable enough to provide firefighting and rescue access for Air Force large frame aircraft, especially the C-5 door 6 left/right. Manning is not sufficient to provide fire department personnel to tow the system to an emergency response scene, especially at the 5-7 mph recommended by the manufacturer. Positioning of the Lift-A-Loft is laborious, makes personnel susceptible to strains or lower back injuries, and does not provide a rapidly applied braking capability.

6. RECOMMENDATIONS. The Lift-A-Loft elevating platform, model MP25-15 should NOT be procured for fire rescue operations on large frame aircraft. Further investigation is necessary to find a safe reasonable cost vehicle or device to provide flightline firefighting/rescue capability on large frame aircraft such as the C-5, C-17, KC-10 and Civilian Reserve Air Fleet (CRAF) counterparts. The optimum solution could be a towed vehicle, a self motorized vehicle, or a mechanism on a flightline fire rescue vehicle.



ROBERT RETTIE
Program Manager

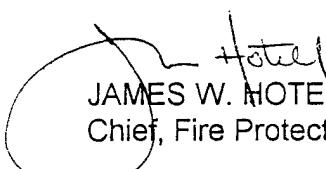
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1. Equipment Photographs.
2. Distribution.

HQ AFCESA/CEXF

20 Jan 96

Concur/non-concur with the recommendations in this report.

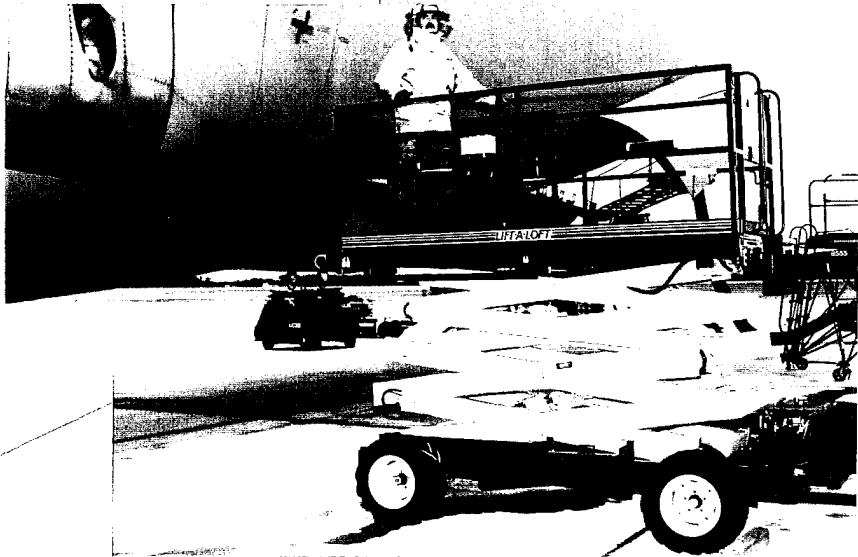


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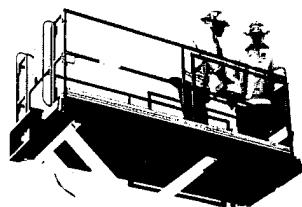
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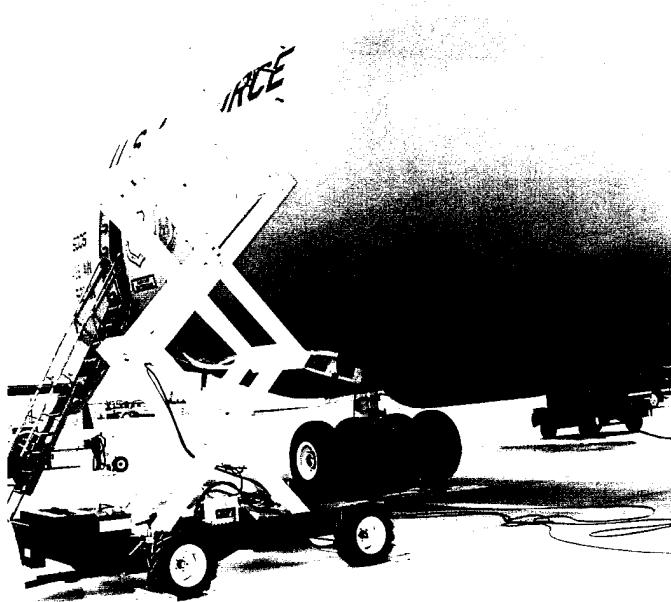
Manual maneuvering
Lift-A-Loft into position



Initial extension
from platform controls



Lift-A-Loft near
full extension



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